



JAMS

The Joint Center of Excellence for Advanced Materials

The Joint Center of Excellence (COE) for Advanced Materials (JAMS) was established in January 2004 to assist in ensuring the safe and reliable application of composites and advanced materials to commercial aircraft. The Center is a joint effort of the Center of Excellence for Composite and Advanced Materials (CECAM) led by Wichita State University and the Center of Excellence for Advanced Materials in Transport Aircraft Structures (AMTAS) led by the University of Washington. The COE is a leader in international coordination of research, development, and standardization for structures constructed from these new materials.

The common goal of this joint center, as with the other COEs, is to

create a cost-sharing academic, industrial, and governmental partnership. The members are forging a union between the public sector, the private sector and academic institutions to create a world-class capability to identify solutions for existing and potential advanced materials and structures issues.

The main focus of this partnership is the research, engineering and development of information used to assure safety and standardize certification of existing and emerging structural applications of composites and advanced materials. Specifically, projects include the evaluation of past applications, performance of applied research

and the development of standard engineering practices.

This Joint Center of Excellence, working with industry and government, also plays an important role in technology transfer, training, and continuing education for the aircraft industry and regulators. The group strives for international standardization; develops consensus for developed protocols; identifies standardized criteria for material and process control; and promotes shared material databases worldwide. COE members and industry affiliates have provided more than \$15M in matching contributions.

Established: January 2004

Research Areas

- Material Standardization and Shared Databases
- Bonded Structures
- Structural Substantiation
- Damage Tolerance and Durability Maintenance Practices
- Advanced Material Forms and Processes
- Unique Advanced Materials Cabin Safety Issues
- Life Management of Materials for Improved Aircraft Maintenance Practices
- Nanotechnology for Composite Structures

Sponsor:

Office of Airport and Aircraft Safety
Research & Development Division

<http://www.jams-coe.org>



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JAMS Projects include:

- Failure of Notched Laminates Under Out-of-Plane Bending
- Development and Evaluation of Fracture Mechanics Test Methods For Sandwich Composites
- Damage Tolerance Test Method Development for Sandwich Composites
- Composite Thermal Damage Measurement with Hand Held FT-IR
- Potential Composite Bond Contamination by Contact Angle
- Test Method Development for Environmental Durability of Bonded Joints
- Effect of Surface Contamination on Composite Bond Integrity and Durability
- CACRC Depot Bonded Repair Investigation – Round Robin Testing
- Impact Damage Formation on Composite Aircraft Structures
- Certification of Composite-Metal Hybrid Structures
- Damage Growth in Fluid-Ingressed Sandwich Structures
- Delamination/Disbond Arrest Features in Aircraft Composite Structures
- Impact Damage Formation on Composite Aircraft Structures
- Certification of Composite-Metal Hybrid Structures
- Delamination/Disbond Arrest Features in Aircraft Composite Structures
- Crashworthiness of Composites Structures
- Design of Energy-Absorbing CFRP Stanchions for the Cargo Floor Structure of Transport
- Certification of Discontinuous Composite Material Forms for Aircraft Structures
- Development of Dynamic Mechanical Analyzer (DMA) Calibration & Testing Procedures

CECAM Director/University Lead:

John Tomblin, Ph.D., Executive Director
National Institute for Aviation Research
Wichita State University
Phone: (316) 978-5234
Email: john.tomblin@wichita.edu

CECAM Members:

Wichita State University
Northwestern University
Purdue University
University of Delaware
University of California, San Diego
Tuskegee University

AMTAS Director/University Lead:

Mark E. Tuttle, Ph.D.
Professor, Mechanical Engineering
University of Washington
Phone: (206) 543-5710
Email: tuttle@u.washington.edu

AMTAS Members:

University of Washington
Washington State University
Oregon State University
Florida International University
University of Utah
Edmonds Community College

FAA Program Manager:

Curtis Davies
William J. Hughes Technical Center
Phone: (609) 485-8758
Email: curtis.davies@faa.gov



Patricia Watts, Ph.D.
Program Director
FAA Centers of Excellence
FAA William J. Hughes Technical Center
Bldg. 300, 4th Floor, L-28
Atlantic City Int'l Airport, NJ 08405

Phone: (609) 485-5043
Fax: (609) 485-5146

Email: patricia.watts@faa.gov
Website: www.faa.gov/go/coe

The FAA has also established the following Centers of Excellence:

- Unmanned Aircraft Systems (2015-2020)
<http://www.assureuas.org/>
- Alternative Jet Fuels and Environment (2013-2018)
<http://ascent.aero>
- General Aviation Safety (2012-2017)
<http://www.pegasas.aero>
- Commercial Space Transportation (2010 - 2020)
<http://www.coe-cst.org>
- Cabin Environment and Intermodal Transport Environment (2004-2014)
<http://acer.eng.auburn.edu>
- Aircraft Noise and Aviation Emissions Mitigation (2003-2014)
<http://www.partner.aero>
- General Aviation Research (2001-2013)
<http://www.cgar.org>
- Airworthiness Assurance (1997-2007)
- Operations Research (1996-2008)
<http://www.nextor.org>
- Airport Technology (1995-2012)
<http://www.ceat.uiuc.edu/>
- The Joint Center for Computational Modeling of Aircraft Structures (1992-1996)

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